



MATERIALS SAFETY DATA SHEET (MSDS) Toluene (C₆H₅CH₃)	MSDS Number:	
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1. Product Identification

Chemical Name	Toluene
Other means of identification	<p>Benzene, methyl-; Methylbenzene; Toluol; Phenyl methane; Methyl benzol; toluene, pure; preparation consisting of: – 80 % or more but not more than 90 % by weight of (S)-hydroxy-3-phenoxy-benzeneacetonitrile (CAS RN 61826-76-4) and – 10 % or more but not more than 20 % by weight of toluene (CAS RN108-88-3); toluene, crude; preparation containing by weight: – 15 % or more but not more than 60 % of styrene butadiene copolymers or styrene isoprene copolymers and – 10 % or more but not more than 30 % of pinene polymers or pentadiene copolymers dissolved in: – methyl ethyl ketone (CAS RN 78-93-3) – heptane (CAS RN 142-82-5), and – toluene (CAS RN 108-88-3) or light aliphatic solvent naphtha (CAS RN 64742-89-8); methacide;1-Methylbenzene</p>
Product type	Liquid.
CAS No	108-88-3
Recommended use	Synthetic/Analytical chemistry.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer Supplier	
E-Mail	
Contact Person	
Emergency Telephone	



2. Hazard(s) identification

OSHA/HCS status:

This material is considered hazardous by the OSHA Hazard Communication Standard(29 CFR 1910.1200).

Classification of the substance or mixture

Flammable Liquids	Category 2
Skin Irritation	Category 2
Toxic to Reproduction	Category 2
Specific Target Organ Toxicity (Single Exposure) (Narcotic effects)	Category 3
Specific Target Organ Toxicity (Repeated Exposure)	Category 2

2.2 Classification of the substance:

Hazard pictogram(s)/Symbols



Signal word

Danger

Hazard statements	<p>Highly flammable liquid and vapor. Causes skin irritation. May cause drowsiness or dizziness. Suspected of damaging fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure May form explosive mixtures with air.</p>
Precautionary statements	
General	Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.
Prevention	Obtain special instructions before use. Wear protective gloves. Wear protective clothing. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Wash thoroughly after handling.



Response	Call a POISON CENTER or doctor if you feel unwell. IF exposed or concerned: Get medical advice or attention. Take off contaminated clothing and wash it before reuse.
Storage	Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.
Disposal	Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazards not otherwise classified	None known.

3. Composition and ingredient information

Chemical name	CAS number	%
Toluene	108-88-3	99

4. First-aid measures

Inhalation	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Skin contact	Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes. If high pressure injection under the skin occurs. Always seek medical attention.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.
Ingestion	Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Do not give mouth-to-mouth resuscitation. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Never give anything by mouth to a victim who is unconscious or is having convulsions. Get medical attention immediately.
Most important symptoms/effects, acute and delayed	Irritation. Drowsiness and dizziness. Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.



General information	If exposed or concerned: get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.
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5. Fire-fighting measures

Suitable extinguishing media	Water spray. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire.
Specific hazards arising from the chemical	Vapor may cause flash fire. Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge.
Special protective equipment and precautions for firefighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.
Fire-fighting equipment/instructions	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Vapors may form explosive air mixtures even at room temperature. Prevent buildup of vapors or gases to explosive concentrations. Some of these materials, if spilled, may evaporate leaving a flammable residue. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.
Specific methods	Use water spray to cool unopened containers.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures



<p>For emergency responders</p>	<p>If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".</p>
<p>For non-emergency personnel</p>	<p>No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.</p>
<p>Environmental precautions</p>	<p>Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).</p>
<p>Methods and materials for containment and cleaning up</p>	<p>Small Spills: Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.</p>
	<p>Large Spills: Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.</p>

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7. Handling and storage

<p>Precautions for safe handling</p>	<p>Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Wear personal protective equipment. Do not breathe gas/fumes/vapor/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. The product is extremely flammable, and explosive vapor/air mixtures may be formed even at normal room temperatures. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke. Avoid release to the environment.</p>
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<p>Conditions for safe storage, including any incompatibilities</p>	<p>Flammable liquid storage. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feeding stuffs. Keep out of the reach of children.</p>
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8. Exposure Control / Personal Protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Toluene	<p>ACGIH TLV (United States, 3/2019). TWA: 20 ppm 8 hours.</p> <p>NIOSH REL (United States, 10/2016). STEL: 560 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 375 mg/m³ 10 hours. TWA: 100 ppm 10 hours.</p> <p>OSHA PEL 1989 (United States, 3/1989). STEL: 560 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 375 mg/m³ 8 hours. TWA: 100 ppm 8 hours.</p> <p>OSHA PEL Z2 (United States, 2/2013). AMP: 500 ppm 10 minutes. CEIL: 300 ppm TWA: 200 ppm 8 hours.</p>

<p>Appropriate engineering controls</p>	<p>Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.</p>
<p>Environmental exposure controls</p>	<p>Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.</p>



<u>Individual protection measures</u>	
Hygiene measures	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
<u>Skin protection</u>	
Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear antistatic protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
Other skin protection	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

9. Physical and chemical properties

Appearance	Colorless liquid
Physical state	Liquid.
Form	Liquid.
Color	Colorless.
Odor	Sweet. Pungent
Odor threshold	Not available.



pH	Not available.
Melting point/freezing point	42 °F (5.56 °C)
Initial boiling point and boiling range	230.8 °F (110.44 °C)
Flash point	40.7 °F (4.8 °C) Closed Cup
Evaporation rate	2 (n-Butyl Acetate = 1)
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	1.2 %
Flammability limit - upper (%)	7.1 %
Explosive limit - lower (%)	Not available
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	3.14
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Very slightly soluble.
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	996.5 °F (535.83 °C)
Decomposition temperature	Not available
Viscosity	Not available
Other information	
Molecular formula	C7-H8
Molecular weight	92.14 g/mol
Percent volatile	100 %

10. Stability and reactivity.

Reactivity	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.



Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
Incompatible materials	Reactive or incompatible with the following materials: oxidizing materials
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Acute oral toxicity	LD50 Species: Rat Value: > 5.000 mg/kg Method: EC Directive 92/69/EEC B.1 Acute Toxicity (Oral)
Acute dermal toxicity	LD50 Species: Rabbit Value: > 5.000 mg/kg
Acute inhalation toxicity	LC50 Species: Rat Value: > 20 mg/l Exposure time: 4 h Method: OECD Test Guideline 403
Acute toxicity (other routes of administration)	No data available
Skin corrosion/irritation	Species: Rabbit Result: irritating Method: EEC 92/69, B.4
Serious eye damage/eye irritation	Species: Rabbit Result: non-irritant Method: OECD Test Guideline 405
Respiratory or skin sensitisation	Route of exposure: Dermal Species: Guinea pig Result: non-sensitizing Method: EEC 92/69, B.6
Germ cell mutagenicity	Test Method: In vitro mammalian cell gene mutation test Cell type: mouse lymphoma cells Metabolic activation: with and without metabolic activation Result: negative Method: OECD Test Guideline 476



Carcinogenicity	Species: not specified Note: Not classified due to data which are conclusive although insufficient for classification.
Reproductive toxicity	Remarks: Classification based on Annex VI of regulation 1272/2008/EC.
STOT-single exposure	No data available
STOT - repeated exposure	Note: Conclusive and supporting classification (Ref: REACH Dossier - ECHA disseminated data)
Aspiration hazard	May be fatal if swallowed and enters airways.
Information on other hazards	
Endocrine disrupting properties	No data available
Other information	Solvent removes skin oil from the skin. Solvent vapours have a narcotic effect if inhaled in high concentrations.

12. Ecological information






Toxicity	
Toxicity to fish	No data available
Toxicity to aquatic plants	No data available
Toxicity to Microorganisms	No data available
Toxicity to aquatic invertebrates	No data available
Chronic toxicity to aquatic invertebrates	No data available
Persistence and degradability	Biodegradability: Biodegradation: 81 % Exposure time: 5 d Result: Readily biodegradable
Bio accumulative potential	No data available
Mobility in soil	No data available
Results of PBT and vPvB assessment	No data available
Endocrine disrupting propertie	No data available
Other adverse effects	Do not flush into surface water or sanitary sewer system.



13. Disposal considerations

Disposal methods	The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
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14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1294	UN1294	UN1294	UN1294	UN1294
UN proper shipping name	TOLUENE	TOLUENE	TOLUENE	TOLUENE	TOLUENE
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	II	II	II	II	II
Environmental hazards	No.	No.	No.	No.	No.

“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”

Additional information

DOT Classification	Reportable quantity 1000 lbs / 454 kg [137.86 gal / 521.84 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
	Limited quantity Yes.
	Quantity limitation Passenger aircraft/rail: 5 L. Cargo aircraft: 60 L.
	Special provisions IB2, T4, TP1



TDG Classification	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3).
	Explosive Limit and Limited Quantity Index 1
	<u>Passenger Carrying Road or Rail Index</u> 5
IATA	The environmentally hazardous substance mark may appear if required by other transportation regulations.
	Quantity limitation Passenger and Cargo Aircraft: 5 L. Cargo Aircraft Only: 60 L. Limited Quantities - Passenger Aircraft: 1 L.
Special precautions for user	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Transport in bulk according to IMO instruments	Not available.

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Basis	Value	Remarks
Regulation (EC) No. 1907/2006, Annex XVII		This product contains an ingredient according to Annex XVII of the REACH Regulation 1907/2006/EC.
Directive 2012/18/EC SEVESO III Listed in Regulation : P5c: FLAMMABLE LIQUIDS Number in Regulation: 1.2.5.3 Substances of very high concern (SVHC)	Quantity: 5.000.000 kg Quantity: 50.000.000 kg	This product does not contain substances of very high concern according to Regulation (EC) No Article 57 above the respective regulatory 1907/2006 (REACH), concentration limit of $\geq 0.1\%$ (w/w).

16. Any other relevant information



History

Product name

Product code

Date of printing

Date of issue/Date of
revision

Date of previous issue

Version

Prepared by

17. Change Details

